

CLAIMS

What is claimed is:

1. A disc centering device for centering discs which are spaced by spacers, comprising:
 - a base plate;
 - a chuck which is installed on the base plate;
 - a hub unit which is detachably engaged to the chuck and receives the discs to be stacked;
 - disc pushers which are slidably provided outside the hub unit and include corresponding pressure members which push circumferences of the discs and center the discs ;
 - a driving unit which slides the disc pushers; and
 - biasing units which are slidably provided outside the hub unit and push circumferences of the spacers.
2. The disc centering device according to claim 1, wherein the chuck includes a collet which grabs or relieves the hub unit according to whether a compressed air is provided to the chuck.
3. The disc centering device according to claim 1, wherein the hub unit comprises:
 - a hub body which is detachably engaged to the chuck and receives the discs; and
 - a hub cap which moves up or down to compress the discs with respect to the hub body.
4. The disc centering device according to claim 3, wherein the hub cap moves up or down according to whether a compressed air is provided to the hub unit.
5. The disc centering device according to claim 1, wherein the disc pushers are provided in a radial direction relative to the hub unit.
6. The disc centering device according to claim 5, wherein the disc pushers include first, second and third disc pushers which are provided at intervals of 120 degrees with respect to the hub unit.

7. The disc centering device according to claim 1, wherein the driving units includes:
- a motor;
 - a belt pulley which is connected to the motor and the disc pushers; and
 - a link which is linearly moved by the belt pulley and simultaneously moves the disc pushers back or forth.
8. The disc centering device according to claim 1, wherein the driving unit includes cylindrical actuators which drive the corresponding disc pushers.
9. The disc centering device according to claim 1, wherein each of the pressure members includes a plate spring which is adapted to simultaneously pressurize the circumferences of the discs having different diameters.
10. The disc centering device according to claim 1, wherein each of the biasing units includes:
- a holder having one or more rods which push the spacers; and
 - a holder driving unit which moves the holder back and forth.
11. The disc centering device according to claim 1, wherein the biasing units are installed in a radial direction relative to the hub unit.
12. The disc centering device according to claim 11, wherein the biasing units include first, second and third biasing units which are installed at intervals of 120 degrees with respect to the hub unit.
13. The disc centering device according to claim 10, wherein a number of the rods corresponds to a number of the stacked spacers so as to simultaneously pressurize the spacers.
14. The disc centering device according to claim 10, wherein each of the holder driving units includes:
- a motor; and

a rack and pinion which moves the corresponding holder having one or more rods back or forth by being moved linearly according to a rotation of the motor.

15. The disc centering device according to claim 10, wherein the holder driving units are cylindrical actuators.

16. The disc centering device according to claim 1, wherein:
the biasing units include first, second and third biasing units which are provided in a radial direction relative to the spacers, and
the first, second and third biasing units simultaneously bias the spacers stacked relative to the hub unit.

17. The disc centering device according to claim 16, wherein each of the first, second and third biasing units includes rods which pressurize a corresponding group of spacers.

18. The disc centering device according to claim 10, wherein the holder driving units of the biasing units simultaneously move the holders back and forth to bias the spacers.

19. The disc centering device according to claim 14, wherein the rack and pinions of the holder driving units simultaneously move the holders back and forth to bias the spacers.

20. The disc centering device according to claim 1, wherein:
the disc pushers move forward to contact and simultaneously center the discs,
the biasing units move forward to contact and simultaneously bias the spacers, and
the hub unit includes a hub cap which clamps the centered discs and biased spacers.

21. The disc centering device according to claim 1, wherein the biasing units bias the spacers so as to prevent the discs from becoming eccentric during a rotation of the discs.

22. The disc centering device according to claim 1, further comprising supporting units which support the corresponding pressure members with respect to the disc pushers so as to reinforce a restoring force of the pressure members.

23. A disc centering device for centering discs which are spaced by spacers, comprising:

- a base plate;

- a chuck which is installed on the base plate;

- a hub unit which is detachably engaged to the chuck and receives the discs to be stacked; and

- a centering and biasing unit which is provided outside the hub unit, centers the discs and biases the spacers, wherein the centering and biasing unit comprises:

 - a disc centering unit having pushing members which simultaneously push circumferences of the discs to center the discs, and

 - a spacer biasing unit having biasing rods which simultaneously bias the spacers.